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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,237	12/07/2001	Bidyut K. Sen	03226/092001	5837
32615	7590	08/25/2004	EXAMINER	
OSHA & MAY L.L.P./SUN 1221 MCKINNEY, SUITE 2800 HOUSTON, TX 77010			LEWIS, MONICA	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/010,237	Applicant(s) SEN, BIDYUT K.	
	Examiner Monica Lewis	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment filed June 3, 2004.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 3, 5, 8 and 17 are rejected under 35 U.S.C. 103(a) as obvious over Applicant's Prior Art in view of Schaper (UK Patent No. 2098001A).

In regards to claim 1, Applicant's Prior Art discloses the following:

a) a semiconductor die (11) having an active side adapted to face and be connected to the substrate, the active side having power connections arranged to distribute power to and from the semiconductor die, wherein the semiconductor die is arranged to fit within the aperture when the semiconductor die and the capacitor are connected to the substrate (For Example: See Figure 1); and

b) a capacitor (17) wherein the bottom surface is provided with power connections adapted to be connected to a substrate (For Example: See Figure 1).

In regards to claim 1, Applicant's Prior Art fails to disclose the following:

a) a unitary capacitor having a bottom surface, a top surface, and an aperture in a central portion thereof extending from the top surface to the bottom surface.

However, Schaper discloses a unitary capacitor (For Example: See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include an unitary capacitor as

Art Unit: 2822

disclosed in Schaper because it aids in distributing power in a low impedance manner (For Example: See Abstract).

In regards to claim 2, Applicant's Prior Art discloses the following:

a) aperture is rectangular (For Example: See Figure 1).

In regards to claim 3, Applicant's Prior Art fails to disclose the following:

a) a unitary capacitor that comprises a layer of an electrically conductive material and a layer of a dielectric material.

However, Schaper discloses a unitary capacitor that comprises a layer of an electrically conductive material and a layer of a dielectric material (For Example: See Page 3 Lines 23-25). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include an unitary capacitor that comprises a layer of an electrically conductive material and a layer of a dielectric material as disclosed in Schaper because it aids in distributing power in a low impedance manner (For Example: See Abstract).

In regards to claim 5, Applicant's Prior Art discloses the following:

a) electrical connections provided on the bottom surface comprise a ball grid array (For Example: See Figure 1).

In regards to claim 8, Applicant's Prior Art discloses the following:

a) a semiconductor die having an active side active side facing a portion of a top surface of a package substrate, wherein power connections between the active side and the package substrate distribute power to and from the semiconductor die (For Example: See Figure 1).

In regards to claim 8, Applicant's Prior Art fails to disclose the following:

a) a unitary windowframe capacitor having an aperture formed therein, and mounted on the top surface of the package substrate.

Art Unit: 2822

However, Schaper discloses a unitary capacitor (For Example: See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include an unitary capacitor as disclosed in Schaper because it aids in distributing power in a low impedance manner (For Example: See Abstract).

In regards to claim 17, Applicant's Prior Art discloses the following:

a) the capacitor is mounted on the package substrate via a ball grid array (For Example: See Figure 1).

However, Schaper discloses a unitary capacitor (For Example: See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include an unitary capacitor as disclosed in Schaper because it aids in distributing power in a low impedance manner (For Example: See Abstract).

Finally, since Applicant's Prior Art and Schaper are both from the same field of endeavor, the purpose disclosed by Schaper would have been recognized in the pertinent art of Applicant's Prior Art.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as obvious over Applicant's Prior Art in view of Schaper (UK Patent No. 2098001A) and Barnett et al. (U.S. Publication No. 2002/0011354).

In regards to claim 4, Applicant's Prior Art fails to disclose the following:

a) the housing of the unitary capacitor is made from a plastic material.

However, Barnett et al. ("Barnett") discloses housing made from plastic (For Example: See Paragraph 0010). It would have been obvious to one having ordinary skill in the art at the

Art Unit: 2822

time the invention was made to modify the semiconductor device of Applicant's Prior Art to include housing made from plastic as disclosed in Barnett because it aids in protecting the device from being damaged (For Example: See Figures 4-7).

Additionally, since Applicant's Prior Art and Barnett are both from the same field of endeavor, the purpose disclosed by Barnett would have been recognized in the pertinent art of Applicant's Prior Art.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as obvious over Applicant's Prior Art in view of Schaper (UK Patent No. 2098001A) and Pape (U.S. Patent No. 6,215,171).

In regards to claim 6, Applicant's Prior Art fails to disclose the following:

a) the unitary capacitor capacitive material comprises co-fired ceramic.

However, Pape discloses capacitive material made from co-fired ceramic (For Example: See Column 8 Lines 10-12). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include capacitive material made from co-fired ceramic as disclosed in Pape because it aids in determining the capacitance of capacitors (For Example: See Column 3 Lines 39-47 and Column 4 Lines 10-26 and Column 4 Lines 64-67).

Additionally, since Applicant's Prior Art and Pape are both from the same field of endeavor, the purpose disclosed by Pape would have been recognized in the pertinent art of Applicant's Prior Art.

Art Unit: 2822

6. Claim 9 is rejected under 35 U.S.C. 103(a) as obvious over Applicant's Prior Art in view of Schaper (UK Patent No. 2098001A) and Komiya et al. (U.S. Publication No. 2002/0011662).

In regards to claim 9, Applicant's Prior Art fails to disclose the following:

a) electronic component mounted on a top surface of the capacitor.

However, Komiya et al. ("Komiya") discloses the use of an electronic component mounted on a top surface of a capacitor (For Example: See Figure 5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include the use of an electronic component mounted on a top surface of a capacitor as disclosed in Komiya because it aids in reducing the inductance (For Example: See Paragraph 5).

Additionally, since Applicant's Prior Art and Komiya are both from the same field of endeavor, the purpose disclosed by Komiya would have been recognized in the pertinent art of Applicant's Prior Art.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as obvious over Applicant's Prior Art in view of Schaper (UK Patent No. 2098001A) and Tigelaar et al. (U.S. Patent No. 4,827,323).

In regards to claim 10, Applicant's Prior Art fails to disclose the following:

a) a second capacitor mounted on the first capacitor.

However, Tigelaar et al. ("Tigelaar") discloses capacitors stacked on each other (For Example: See Column 1 Lines 31-57). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's

Art Unit: 2822

Prior Art to include capacitors stacked on each other as disclosed in Tigelaar because they aid in increasing capacitance (For Example: See Column 1 Lines 31-57).

Additionally, since Applicant's Prior Art and Tigelaar are both from the same field of endeavor, the purpose disclosed by Tigelaar would have been recognized in the pertinent art of Applicant's Prior Art.

8. Claims 12, 13 and 14 are rejected under 35 U.S.C. 103(a) as obvious over Applicant's Prior Art in view of Schaper (UK Patent No. 2098001A) and Mamodaly et al. (U.S. Patent No. 4,839,712).

In regards to claim 12, Applicant's Prior Art fails to disclose the following:

a) the capacitor comprises a housing.

However, Mamodaly et al. ("Mamodaly") discloses a capacitor that has housing (For Example: See Figure 6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include a capacitor that has housing as disclosed in Mamodaly because it aids in supplying the bias (For Example: See Abstract).

In regards to claim 13, Applicant's Prior Art fails to disclose the following:

a) capacitor comprises a capacitive material.

However, Schaper discloses a capacitor comprises a capacitive material (For Example: See Page 3 Lines 23-25). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include a capacitor comprises a capacitive material as disclosed in Schaper because it aids in distributing power in a low impedance manner (For Example: See Abstract).

Art Unit: 2822

In regards to claim 13, Applicant's Prior Art fails to disclose the following:

a) housing.

However, Mamodaly discloses a capacitor that has housing (For Example: See Figure 6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include a capacitor that has housing as disclosed in Mamodaly because it aids in supplying the bias (For Example: See Abstract).

Finally, since Applicant's Prior Art and Mamodaly are both from the same field of endeavor, the purpose disclosed by Mamodaly would have been recognized in the pertinent art of Applicant's Prior Art.

In regards to claim 14, Applicant's Prior Art fails to disclose the following:

a) a unitary capacitor that comprises a layer of an electrically conductive material and a layer of a dielectric material.

However, Schaper discloses a unitary capacitor that comprises a layer of an electrically conductive material and a layer of a dielectric material (For Example: See Page 3 Lines 23-25). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include an unitary capacitor that comprises a layer of an electrically conductive material and a layer of a dielectric material as disclosed in Schaper because it aids in distributing power in a low impedance manner (For Example: See Abstract).

Finally, since Applicant's Prior Art and Schaper are both from the same field of endeavor, the purpose disclosed by Schaper would have been recognized in the pertinent art of Applicant's Prior Art.

Art Unit: 2822

9. Claim 15 is rejected under 35 U.S.C. 103(a) as obvious over Applicant's Prior Art in view of Schaper (UK Patent No. 2098001A) and Mamodaly et al. (U.S. Patent No. 4,839,712) and Barnett et al. (U.S. Publication No. 2002/0011354).

In regards to claim 15, Applicant's Prior Art fails to disclose the following:

a) the housing is made from a plastic material.

However, Barnett discloses housing made from plastic (For Example: See Paragraph 0010). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include housing made from plastic as disclosed in Barnett because it aids in protecting the device from being damaged (For Example: See Figures 4-7).

Additionally, since Applicant's Prior Art and Barnett are both from the same field of endeavor, the purpose disclosed by Barnett would have been recognized in the pertinent art of Applicant's Prior Art.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as obvious over Applicant's Prior Art in view of Schaper (UK Patent No. 2098001A) and Mamodaly et al. (U.S. Patent No. 4,839,712), Barnett et al. (U.S. Publication No. 2002/0011354) and Pape (U.S. Patent No. 6,215,171).

In regards to claim 16, Applicant's Prior Art fails to disclose the following:

a) the housing comprised co-fired ceramic.

However, Barnett discloses housing made from co-fired ceramic (For Example: See Paragraph 0024). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include

Art Unit: 2822

capacitive and housing material made from co-fired ceramic as disclosed in Barnett because it aids in providing high density and low cost devices (For Example: See Paragraphs 1-3).

Additionally, since Applicant's Prior Art and Barnett are both from the same field of endeavor, the purpose disclosed by Barnett would have been recognized in the pertinent art of Applicant's Prior Art.

b) the capacitive material comprised of co-fired ceramic.

However, Pape discloses capacitive material made from co-fired ceramic (For Example: See Column 8 Lines 10-12). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Prior Art to include capacitive material made from co-fired ceramic as disclosed in Pape because it aids in determining the capacitances of capacitors (For Example: See Column 3 Lines 39-47 and Column 4 Lines 10-26 and Column 4 Lines 64-67).

Additionally, since Applicant's Prior Art and Pape are both from the same field of endeavor, the purpose disclosed by Pape would have been recognized in the pertinent art of Applicant's Prior Art.

Response to Arguments

11. Applicant's arguments filed 6/3/04 have been fully considered but they are not persuasive. First, Applicant argues that "Schaper fails to provide any motivation or suggestion to modify its teachings to include a semiconductor die that has an active side that faces the substrate." However, Applicant's Prior Art, which is the primary reference, discloses a die that has an active side that faces the substrate therefore there is not a need to modify Schaper (For Example: See Figure 1).

Art Unit: 2822

Second, in response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). However, it would have been obvious to modify the semiconductor device of Applicant's Prior Art to include an unitary capacitor as disclosed in Schaper because it aids in distributing power in a low impedance manner (For Example: See Abstract).

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

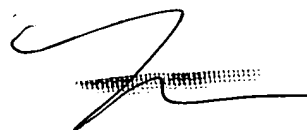
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 2822

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML
August 19, 2004

A handwritten signature in black ink, appearing to read 'Mary Wilczewski', with a stylized flourish at the end.

Mary Wilczewski
Primary Examiner